

FE120

FE120

Diagram No. 5530-5 & 5534

NOAA FORM 76-35A

U.S. DEPARTMENT OF COMMERCE
NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION
NATIONAL OCEAN SURVEY

DESCRIPTIVE REPORT (HYDROGRAPHIC)

Type of Survey Field Examination

Field No.

Office No. FE-120

LOCALITY

State California

General Locality Carquinez Strait

Locality Southern Pacific R.R. Bridge

1953

CHIEF OF PARTY
W.H. Bainbridge

LIBRARY & ARCHIVES

DATE January 18, 1954

☆ U.S. GOV. PRINTING OFFICE: 1976-669-441

NOTE: A new system for registering Field Examinations (FE's) was established in 1980. All FE's are now consecutively numbered as shown hereon. The date shown in the new format is the actual date of survey. This material was previously registered as;

FE No. 10 1953

FENo.10
1953

FE-120

Diag. Cht. nos. 5530-5 & 5534 ✓

Form 504

U. S. COAST AND GEODETIC SURVEY

DEPARTMENT OF COMMERCE

DESCRIPTIVE REPORT

SPECIAL HYDROGRAPHIC INVESTIGATION

Type of Survey CARQUINEZ STRAIT

Field No. Office No F.E.No.10(1953)

LOCALITY

State CALIFORNIA

General locality CARQUINEZ STRAIT

Locality SOUTHERN PACIFIC R.R. BRIDGE

194 53

CHIEF OF PARTY

W. H. Bainbridge

LIBRARY & ARCHIVES

DATE Jan. 18, 1954

B-1870-1 (1)

FENo.10
1953

DEPARTMENT OF COMMERCE

U. S. COAST AND GEODETIC SURVEY

HYDROGRAPHIC TITLE SHEET

The Hydrographic Sheet should be accompanied by this form, filled in as completely as possible, when the sheet is forwarded to the Office.

REGISTER No.
Special Hydrographic Investigation
Field No. Carquinez Strait

State California

General locality Carquinez Strait

Locality Southern Pacific Railroad Bridge

Scale 1:10,000 Date of survey 10-14-December 1953

Instructions dated 24 November 1953

Vessel Ship PIONEER

Chief of party W. H. Bainbridge

Surveyed by C. A. George

Soundings taken by fathometer, graphic recorder, hand lead, wire Graphic Recorder

Fathograms scaled by K. A. MacDonald

Fathograms checked by G. E. Cook

Protracted by G. E. Cook

Soundings penciled by G. E. Cook

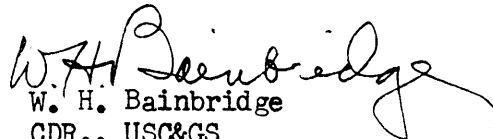
Soundings in ~~fathoms~~ feet at ~~MLW~~ MLLW

REMARKS:

APPROVAL SHEET

The field records, and smooth sheets
have been examined and are approved as
being complete and adequate.

Daily examinations of the boat sheet
were made.


W. H. Bainbridge
CDR., USC&GS
Comdg. Officer
Ship PIONEER

DEPARTMENT OF COMMERCE

U. S. COAST AND GEODETIC SURVEY

HYDROGRAPHIC TITLE SHEET

The Hydrographic Sheet should be accompanied by this form, filled in as completely as possible, when the sheet is forwarded to the Office.

REGISTER NO. _____
Special Hydrographic Investigation
Field No. Carquines Strait

State California
General locality Carquines Strait
Locality Southern Pacific Railroad Bridge
Scale 1:10,000 Date of survey 10-14-December 1953
Instructions dated 24 November 1953
Vessel Ship PIONEER
Chief of party W. H. Bainbridge
Surveyed by C. A. George
Soundings taken by fathometer, graphic recorder, hand lead, wire Graphic Recorder
Fathograms scaled by K. A. MacDonald
Fathograms checked by G. E. Cook
Protracted by G. E. Cook
Soundings penciled by G. E. Cook
Soundings in ~~fathoms~~ feet at ~~MLLW~~ MLLW

REMARKS: _____

DESCRIPTIVE REPORT TO ACCOMPANY HYDROGRAPHIC SURVEY
SPECIAL HYDROGRAPHIC INVESTIGATION - CARQUINEZ STRAIT (1953)

A. PROJECT

No project number was assigned. The work was done in accordance with the Director's letter, 22/MEK, S-2-PI, dated 24 November 1953.

B. SURVEY LIMITS AND DATES

The survey is in the vicinity of the Southern Pacific Railroad bridge which crosses Carquinez Strait near Martinez, California

Hydrography was done on two days, December 10 and December 14, 1953.

The survey joins H-7784(1949) on the east, and the entire area is a resurvey of a portion of H-7786(1949).

C. VESSEL AND EQUIPMENT

Ship PIONEER, Launch No. 2 was used throughout. The launch operated from the Benicia Arsenal.

808 Fathometer, No. 103 S was used for all soundings.

D. TIDE STATIONS

Readings from the tide staff at Benicia (Arsenal Dock), California were used for the reduction of all soundings without time or range corrections.

E. SMOOTH SHEET

As directed in Paragraph 5 of the Director's letter dated 24 November 1953, a copy of Chart No. 5574 was used as the smooth sheet.

F. CONTROL STATIONS

Triangulation and recoverable topographic stations were used for control. For origin of control, see "List of Stations" included in this report.

H. SOUNDINGS

All depths were measured by 808 Fathometer. Velocity corrections were determined from bar checks.

I. CONTROL OF HYDROGRAPHY

Sextant fixes on shore objects were used to control all hydrography.

J. ADEQUACY OF SURVEY

The survey of the area involved is complete, and the survey is considered adequate to supersede prior surveys for charting.

K. CROSSLINES

The percentage of crosslines was approximately 20%.

L. COMPARISON WITH PRIOR SURVEYS

A copy of H-7784(1949) was not available for comparison.

The present survey is principally an investigation of shoaling in the vicinity of the spit which extends in a northeast-southwest direction from the Southern Pacific Railroad Bridge. The area was previously surveyed on H-7786(1949).

Considerable shoaling has taken place. The 30-foot curve has extended about 320 meters in a southwesterly direction. For specific depths, see paragraph N below.

Considerable changes have also occurred northeast of the railroad bridge in the area between the bridge and Anchorage 26 Obstruction Buoy (Red and Black Spar).

M. COMPARISON WITH CHART

Same as stated in paragraph L.

N. DANGERS AND SHOALS

As previously mentioned in paragraph L, the shoal southwest of the railroad bridge has extended southwest for about 320 meters.

A depth of 25.0 feet (Position 58a-59a) was obtained at Latitude 38° 02' 300 meters and Longitude 122° 07' 910 meters.

Several depths of 26 and 27 feet (Pos. 26a-27a and 60a-61a) were obtained at Latitude 38° 02' 202 meters and Longitude 122° 07' 902 meters. This shoal area is directly on the approach to the lift span of the railroad bridge and near the position of the reported grounding.

A sounding of 32.9 feet (Pos. 20b-21b) was obtained at Latitude 38° 01' 1710 meters and Longitude 122° 07' 1130 meters. This depth is about 17 meters off the face of the Shell Oil Co. pier and is several feet shoaler than the charted depth or depths shown on H-7786(1949).

Shoaling has also occurred in the area northeast of the railroad bridge. A depth of 10.0 feet (Pos. 86a-87a) was obtained at Latitude 38° 02' 1100 meters and Longitude 122° 07' 200 meters. A depth of 15.0 feet (Pos. 75a-76a) was obtained at Latitude 38° 02' 1020 meters and Longitude 122° 07' 275 meters.

P. AIDS TO NAVIGATION

Anchorage 26 Obstruction Buoy (Red and Black Spar Buoy)
Latitude 38° 02' 994 meters. Longitude 122° 07' 145 meters.
Position 85a - 10 December 1953. Depth at buoy: 18.8 feet.
19

It is noted that the plotted position of the buoy differs by about 80 meters from the position charted on Chart No. 5574.

U. VELOCITY CORRECTIONS

Velocity corrections were determined by daily bar checks. An abstract of the corrections applied is included in this report.

Z. TABULATION OF APPLICABLE DATA

1. Tides (Form 277) 1 volume. Benicia (Arsenal Deck) 10 & 14 Dec. 1953
2. Leveling Record - Tide Station (Form 258) 1 Vol. Benicia (Arsenal Dock) 8 & 9 December 1953.
3. Bar Check Graphs - 2 sheets.
4. Tide Curves - 1 sheet
5. Hourly Heights (Form 362) 1 page.
6. Fathograms(3) in 1 envelope.

Clarence A. George
Clarence A. George
CDR., USCGS

Approved and Forwarded:

W. H. Bainbridge
W. H. Bainbridge
CDR., USCGS
Comdg. Officer
Ship PIONEER

STATISTICS FOR SPECIAL HYDROGRAPHIC INVESTIGATION

CARQUINEZ STRAIT (1953)

Ship PIONEER - Launch No. 2

Day Letter	Date 1953	No. Pos.	St. Miles	Vol.
a	10 December	87	6.3	1
b	14 December	62	3.5	1

Totals:	Positions	149
	St. Miles	9.8
	Sq. St. Mi.	0.4

Special Hydrographic Investigation - Carquinez Strait

TIDE NOTE

Readings from the tide staff at the Benicia (Arsenal Dock), California were used for the reduction of all soundings. The tide staff is located on the westerly end of the old pier at the Benicia Arsenal (Latitude: $38^{\circ}02.6'$ and Longitude: $122^{\circ}08.1'$). It is the same staff established in 1952 by the Ship BOWIE.

The tide staff was connected to three bench marks on 8 December 1953. Mean lower low water corresponds to a height of 4.55 feet on the staff.

No corrections for differences in time of height were applied.

Special Hydrographic Investigation - Carquinez Strait

ABSTRACT OF VELOCITY CORRECTIONS

"a" Day - 10 December 1953

Pos. 1a to 36a

A Scale

0' to 22' -0.20 ft.
22' to 34' -0.40 ft.
34' to 50' -0.60 ft.
Over 50' -0.80 ft.

B Scale

40' to 44' -4.0 ft.
44' to 47' -4.2 ft.
47' to 51' -4.4 ft.
51' to 55' -4.6 ft.
55' to 60' -4.8 ft.
Over 60' -5.0 ft.

Pos. 37a to 87a

A Scale

20' to 26' -0.4 ft.
26' to 40' -0.6 ft.
40' to 50' -0.8 ft.

B Scale

40' to 45' -4.4 ft.
45' to 50' -4.6 ft.
50' to 55' -4.8 ft.
55' to 60' -5.0 ft.
Over 60' -5.2 ft.

"b" Day - 14 December 1953

Positions 1b to 62b (All)

A Scale

10' to 17' -1.0 ft.
17' to 22' -1.2 ft.
22' to 36' -1.4 ft.
Over 36' -1.2 ft.

B Scale

All depths -5.2 ft.

CA 9

LIST OF STATIONS
Hydrographic Investigation in Carquinez Strait

<u>Name used in Hydro. Survey</u>	<u>Origin of Station</u>
ARE	T-7136
BAN ✓	T-7136
CAS ✓	T-7136
CLO	Clöcktower Flagstaff, 1909
DER ✓	T-7136
DIA ✓	T-7136
DOME	Martinez Courthouse, 1922
ERO	Suisun Pt., So. Pac. R.R, Aviation Beacon 1932
FEN ✓	T-7136
FOR ✓	T-7136
GET ✓	T-7136
LIT ✓	T-7136
MOC	Bulls Head Pt. Mococo Fertilizer Co., Stack 1922
REE	Benicia Wharf Light, Vol. 1 Pg. 3
SEM ✓	T-7136
SOS ✓	T-7136
TER	Martinez, Food Cannery Water Tank, 1949
VAN	Benicia Arsenal Incinerator, 1949
WAG	Benicia Arsenal Flagpole, 1949

✓ 1949.

RHC

TIDE NOTE FOR HYDROGRAPHIC SHEET

~~Division of Coastal Surveys~~

22 January 1954

Division of Charts: R. H. Carstens

Plane of reference approved in 1
volumes of sounding records for

~~HYDROGRAPHIC SHEET~~

FE NO. 10 1953

Locality Carquinez Strait, California

Chief of Party: W. H. Bainbridge in 1953

Plane of reference is mean lower low water, reading

4.6 ft. on tide staff at Benicia (Arsenal Dock)

15.6 ft. below B. M. 9 (1948)

Height of mean high water above plane of reference
is 5.4 feet.

Condition of records satisfactory except as noted below:

E.C. McKay

Section of Tides

Chief, Division of Tides and Currents.

GEOGRAPHIC NAMES

Survey No. F.E.No.10(1953)

Name on Survey	On Chart No.	On previous survey No.	On U. S. quadrangle Maps	From local information	On local Maps	P. O. Guide or Map	Rand McNally Atlas	U. S. Light List		
	A	B	C	D	E	F	G	H		K
										1
										2
										3
										4
										5
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										25
										26
										27

Hydrographic Surveys (Chart Division)

HYDROGRAPHIC SURVEY NO. F.F.No.10(1953)

Records accompanying survey:

Boat sheets; sounding vols. 1.....; wire drag vols.;
bomb vols.; graphic recorder rolls 1.Env..;
special reports, etc. 1 Smooth Sheet (Chart No. 5574); 1 Descriptive Report;
2 Sheets of Bar Check Graphs; 1 Sheet of Tide Curves; 1 Sheet Hourly Heights;

The following statistics will be submitted with the cartographer's report on the sheet:

Number of positions on sheet 149

Number of positions checked 13

Number of positions revised 1

Number of soundings revised
(refers to depth only) 0

Number of soundings erroneously spaced 0

Number of signals erroneously plotted
or transferred 0

Topographic details Time 0

Junctions Time 0

Verification of soundings from
graphic record Time 2 hrs

Verification by *Lu Jeskind* Total time 15 Date *May 19, 1953*

Reviewed by *Lu Jeskind* Time 12 Date *May 23, 1953*

Review of Field Examination No. 10, 1953

This is a field examination of the shoal in Carquinez Strait in the vicinity of the railroad bridge at Martinez, California. The approximate limits of the examination extend from the railroad bridge southwest to the Shell Oil Company pier, and from the 18-ft. curve on the south bank north to the deep water on the north side of the shoal. The examination also covers the area northeast of the railroad bridge between the bridge and the RB buoy in lat. $38^{\circ}02.6'$, long. $122^{\circ}07.1'$.

The purpose of the field examination was to determine:

1. The depths in the area which lies 700 yds., 241° T, from the aero beacon on the railroad bridge. In this area the U. S. Coast Guard reported the grounding of a tanker drawing 31 ft.
2. The depths in the area which lies northeast of the railroad bridge between the bridge and the RB buoy in lat. $38^{\circ}02.6'$, long. $122^{\circ}07.1'$.

The results of the examination are as follows:

1. At 700 yds., 241° T from the aero beacon on the bridge, depths of 32-34 ft. were obtained. However, 70 meters northeastward and 100 meters southwestward from the aforementioned location, depths of 29 ft. and 27 ft. respectively were revealed.
2. The area which lies northeast of the bridge and which is delineated in paragraph 1 above, has been adequately developed to show present depths.

A comparison between surveys H-7786 and H-7784 of 1949 and the field examination reveals considerable change in the bottom configuration. The 30-ft. curve has extended about 320 meters in a southwesterly direction beyond its 1949 limits. Depths along the crest of the shoal have decreased from 2-8 ft. Attention, however, is especially directed to the following changes in depths:

<u>Location</u>		<u>F.E. Depths</u>	<u>1949 Depths</u>	<u>Remarks</u>
<u>Lat.</u>	<u>Long</u>	<u>Feet</u>	<u>Feet</u>	
$38^{\circ}01.92'$	$122^{\circ}07.77'$	32	38	Shell Oil Co. Pier approach to lift of span. over RR bridge.
$38^{\circ}02.17'$	$122^{\circ}07.62'$	25-29	36-38	

F.E. 10, 1953

Because of the changes in the bottom configuration, the field examination supersedes the 1949 surveys within the common area.

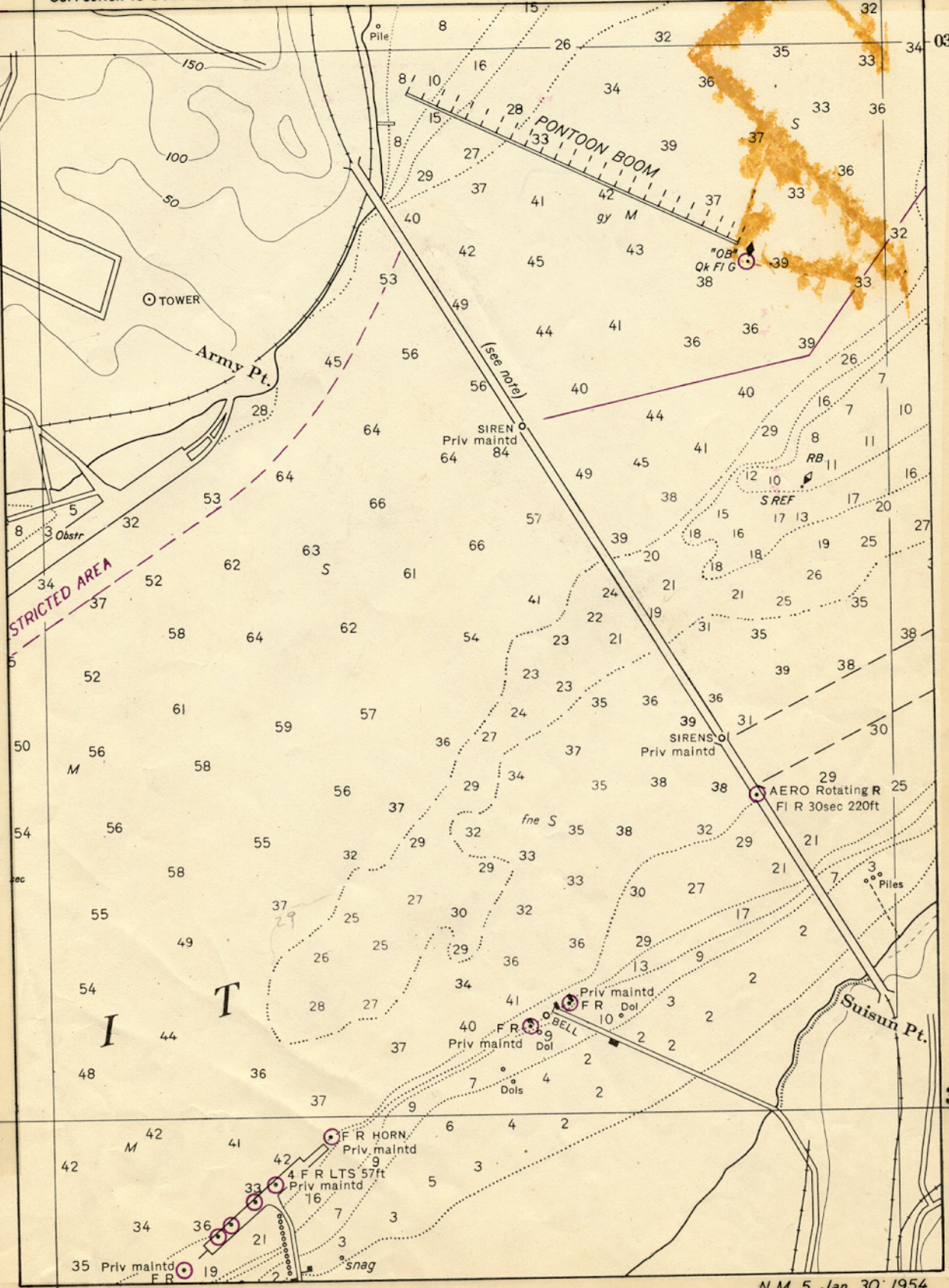
This work was applied from advance information of the field examination to a chartlet as a correction to Chart 5574. The chartlet was issued as part of H.O.N. to M. 5, Jan. 30, 1954. Except as noted below, only minor differences of 1-2 ft. due to revisions made during verification were found between the charted and verified depths:

<u>Charted Depth</u>	<u>Location</u>		<u>F.E. Depth</u>
<u>feet</u>	<u>Latitude</u>	<u>Longitude</u>	<u>feet</u>
37	38°02.20'	122°07.73'	29
39	38°02.55'	122°07.32'	35

The Descriptive Report adequately covers all other matters pertaining to this examination. No further discussion is considered necessary.

I. M. Zeskind
3/17/54

Inspected by - R. H. Carstens



122° 08'

122° 07'

SOUNDINGS - VICINITY OF
SOUTHERN PACIFIC RAILROAD BRIDGE

CARQUINEZ STRAIT

U.S. COAST & GEODETIC SURVEY
10 -14 December 1953

⊙ INCINERATOR

⊙ TOWER

S.P.R.R. BRIDGE

CARQUINEZ STRAIT

SECTION CHART 5574

38° 02'

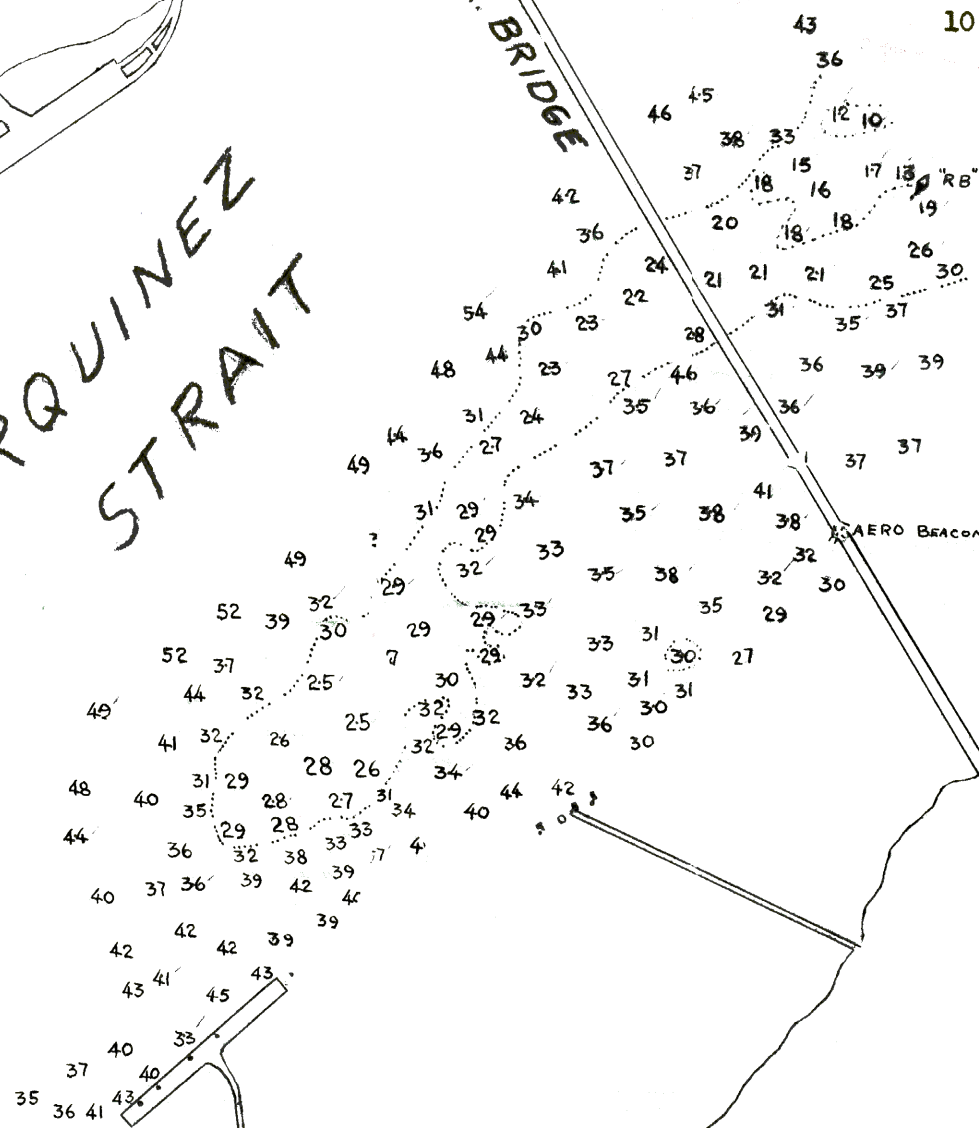
STACK ⊙

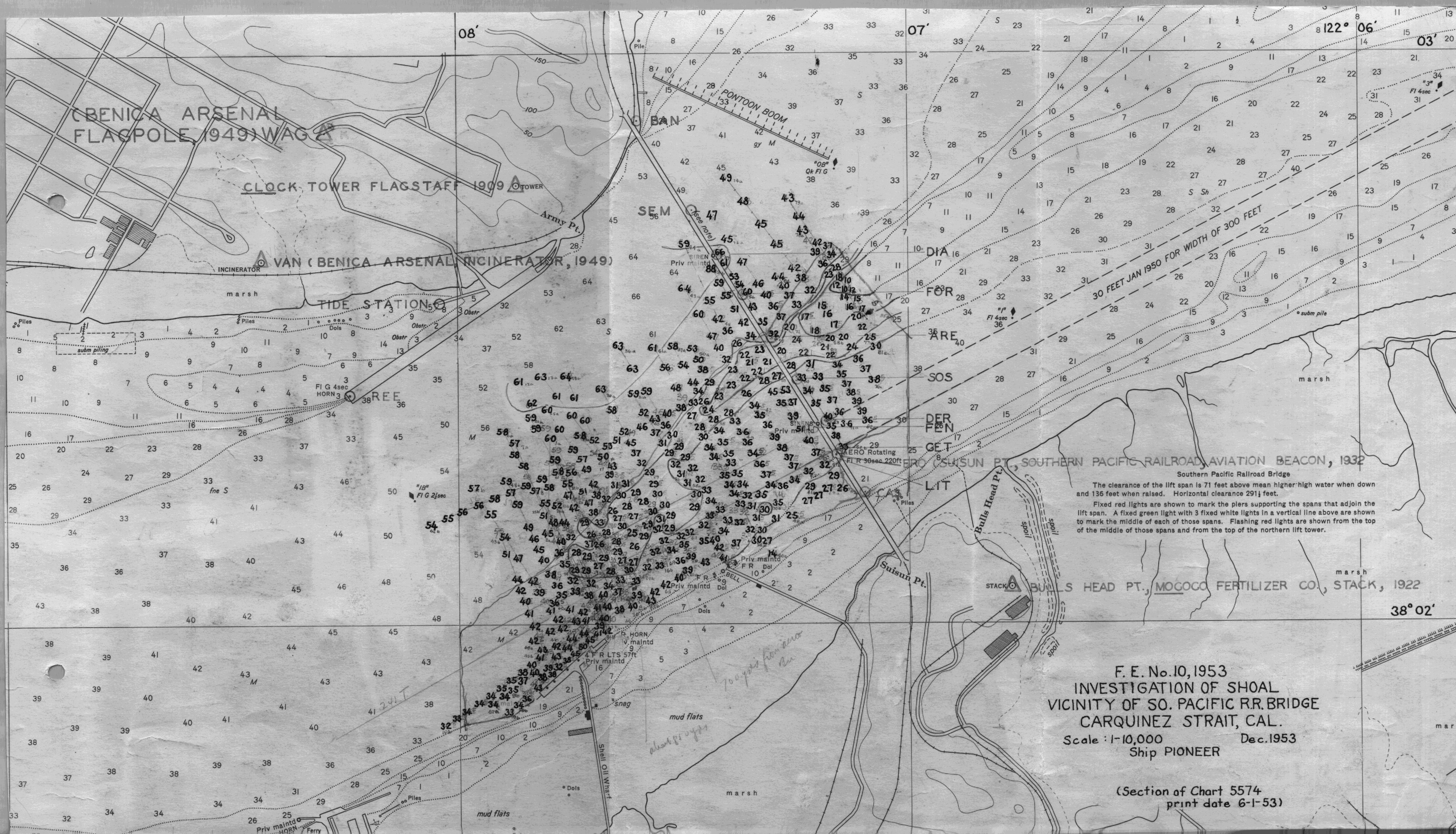
38° 02'

SCALE OF USC&GS CHART NO. 5574

Soundings in Feet Reduced to MLLW.

Subject to Verification by
Washington, D.C. Office.





(BENICA ARSENAL
FLAGPOLE 1949) WAG

CLOCK TOWER FLAGSTAFF 1909

VAN (BENICA ARSENAL INCINERATOR, 1949)

TIDE STATION

REE

SEM

DIA

FOR

ARE

SOS

DER

FEN

GET

LIT

SOUTHERN PACIFIC RAILROAD AVIATION BEACON, 1932

Southern Pacific Railroad Bridge

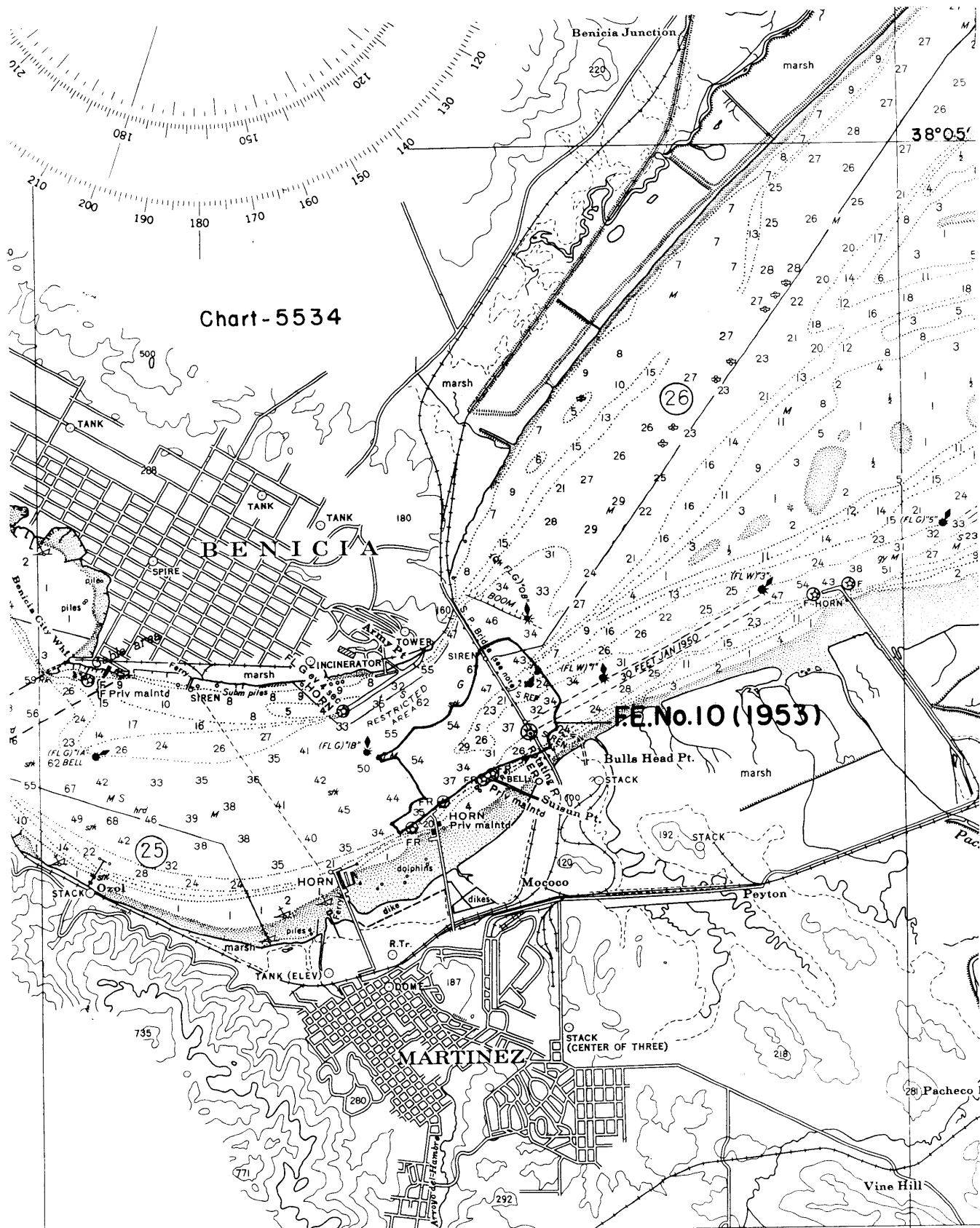
The clearance of the lift span is 71 feet above mean higher high water when down and 136 feet when raised. Horizontal clearance 291½ feet.
Fixed red lights are shown to mark the piers supporting the spans that adjoin the lift span. A fixed green light with 3 fixed white lights in a vertical line above are shown to mark the middle of each of those spans. Flashing red lights are shown from the top of the middle of those spans and from the top of the northern lift tower.

BULLS HEAD PT., MOGOCO FERTILIZER CO., STACK, 1922

F. E. No. 10, 1953
INVESTIGATION OF SHOAL
VICINITY OF SO. PACIFIC R.R. BRIDGE
CARQUINEZ STRAIT, CAL.

Scale: 1-10,000
Ship PIONEER

(Section of Chart 5574
print date 6-1-53)



NAUTICAL CHARTS BRANCH

SURVEY NO. F. E. No. 10(1953)

Record of Application to Charts

[illegible]

M-2168-1

A basic hydrographic or topographic survey supersedes all information of like nature on the uncorrected chart. Give reasons for deviations, if any, from recommendations made under "Comparison with Charts" in the Review.